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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,813	07/20/2005	Karine Valle	13777-46	8622

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EXAMINER	
ARCIERO, ADAM A	
ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
06/04/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/542,813	VALLE ET AL.	
	Examiner	Art Unit	
	ADAM A. ARCIERO	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-62* is/are pending in the application.

4a) Of the above claim(s) *47-56 and 59-62* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-46,57 and 58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/11/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

CONDUCTIVE ORGANIC-INORGANIC HYBRID MATERIAL COMPRISING A MESOPOROUS PHASE, MEMBRANE, ELECTRODE AND FUEL CELL

Examiner: Adam Arciero Art Unit 1795 S.N. 10/542,813 June 1, 2010

DETAILED ACTION

1. The Applicant's response filed on March 11, 2010 was received. Claims 29-62 are currently pending. Claim 29 has been amended.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Serpico et al. and Sayari et al., as evidenced by Ohlsen et al. on claims 29-31, 33-43, 45-46 and 58 are maintained.

As to Claim 29-31, 33-34 and 45, SERPICO et al. discloses an organic-inorganic hybrid material comprising two phases, a mineral phase and a material comprising a polymer integrated in said mineral phase and covalently bonded to said mineral phase (pg. 7, [0045]). SERPICO et al. does not specifically disclose wherein the mineral phase comprises walls which define pores forming a structured mesoporous network.

However, SAYARI et al. discloses an organic-inorganic hybrid material comprising a mesoporous silica mineral phase (pg. 3165, col. 2). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the mineral phase material of SERPICO et al. with a mesoporous mineral phase, because SAYARI et al. teaches that it becomes possible

to synthesize highly dispersed silica-polymer nanocomposites, which exhibit improved properties such as modulus, resistance to distortion and strength (pg. 3165, col. 2). Claim 29 does not require the at least one surface active agent.

As to Claims 35-36, SERPICO et al. discloses wherein the anion exchange groups can be basic aromatic or nonaromatic radicals containing at least one radical selected from imidazole (pg. 6, [0042]).

As to Claims 37-38, SERPICO et al. discloses wherein the mineral phase is alumina (pg. 7, [0045]).

As to Claims 39-40, SERPICO et al. discloses a co-continuous network formed of the hybrid material (pg. 7, [0045]).

As to Claims 41 and 58, the combination of SERPICO et al. and SAYARI et al. disclose a mesoporous network. However, the prior arts are silent to the pore size ranging from 1 to 100 nm. However, it is known that mesoporous networks have an average pore size of 2 nm to 50 nm, as evidenced by OHLSEN et al. (pg. 7, [0070]).

As to Claims 42-43, SERPICO et al. discloses wherein the polymer is a styrene-ethylene polymer (pg. 7, [0047]).

As to Claim 46, SERPICO et al. discloses an electrolyte membrane for a fuel cell comprising the material of claim 29, wherein said membrane is placed between two electrodes of the fuel cell, therefore said electrode comprises the material of claim 29.

4. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Serpico et al., Sayari et al. and Brinker et al. on claims 32 and 44 are maintained.

As to Claims 32 and 44, the combination of SERPICO et al. and SAYARI et al. as evidenced by OHLSEN et al. does not specifically disclose an optional phase composed of at least one surface active agent.

However, BRINKER et al. teaches a hybrid material comprising a surfactant such as phosphates or alkylammonium salts (col. 3, lines 30-45). The surface active agent is different from the organic polymer of Serpico et al. in terms of their structure and their effect. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the material of SERPICO et al. and SAYARI et al. with a surfactant, because BRINKER et al. teaches that a thin film having a low dielectric constant can be produced (col. 3, lines 3-5).

5. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Serpico et al., Sayari et al. and Wu on claim 57 is maintained.

As to Claim 57, SERPICO et al. teaches the use of alumina as an oxide. However, the combination of SERPICO et al. and SAYARI et al. does not specifically disclose wherein the oxide is selected from europium, cerium, lanthanum, gadolinium and mixed oxides thereof.

However, WU teaches a method to produce a nano-porous coating onto a solid substrate comprising the use of aluminum, europium and gadolinium (col. 1, lines 12-26 and col. 8, lines 20-51). At the time of the invention, it would have been obvious to one of ordinary skill in the art that the use of aluminum is equivalent or exchangeable with the use of europium or gadolinium in forming nanoporous coatings.

Double Patenting

6. The provisional obviousness-type double patenting rejection on claims 29-46 and 57-58 are withdrawn, because Applicant has amended the claims.

Response to Arguments

7. Applicant's arguments filed March 11, 2010 have been fully considered and are not found to be persuasive.

Applicant's principal arguments are:

a) Serpico discloses membranes on the microscopic scale and Sayari discloses membranes on the nano-scale or the molecular scale and given the differences in scale, Applicants submit that there would be no reason to combine (claim 29).

b) A person having skill in the art would recognize that it would be necessary to remove the polymer from the pores of Sayari because the polymer is already incorporated into the inorganic phase in Serpico (claim 29).

c) Amendments have been made to the claims in both the present application and that of Application number 10/542,768 and therefore the double patenting rejections should be withdrawn.

In response to Applicant's arguments, please consider the following comments.

a) Both Serpico and Sayari teach to conductive organic/inorganic hybrid material membranes. Serpico states that the polymer is formed within the network of the inorganic phase (pg. 7, [0045]). However, Serpico does not specifically disclose wherein the polymer is formed

within a mesoporous network of the inorganic phase. Sayari teaches the benefits for providing the inorganic phase as a mesoporous structure and therefore it would be obvious to modify the inorganic network of Serpico so as to comprise a mesoporous network.

b) Serpico broadly discloses that the polymer is integrated into the inorganic network. Sayari more specifically discloses wherein the polymer is integrated into the pores of an inorganic mesoporous network. Sayari is used to modify the inorganic network of Serpico. It is unclear as to why one of ordinary skill in the art would remove the polymer from the pores of the mesoporous network in the combination of Serpico and Sayari.

c) The amendments to the claims of the both applications do not render the inventions unobvious from one another. Overlapping claimed subject matter is still present in both applications and therefore the rejections remain.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM A. ARCIERO whose telephone number is (571)270-5116. The examiner can normally be reached on Monday to Friday 8am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795